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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/715,828	11/19/2003	Erik Roelof Loopstra	081468-0306843	3642
909	7590	08/05/2004	EXAMINER	
PILLSBURY WINTHROP, LLP			NGUYEN, HUNG	
P.O. BOX 10500			ART UNIT	
MCLEAN, VA 22102			PAPER NUMBER	
			2851	

DATE MAILED: 08/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/715,828	LOOPSTRA ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Hung Henry V Nguyen	2851	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 January 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 January 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-5, 9-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akimoto et al (U.S.Pat. 6,359,688) in view of Takahashi et al (U.S.Pat. 6,522,388).

With respect to claims 1-5, 9-13, Akimoto et al teaches a lithographic projection system comprising substantially all basic features of the instant claims such as: an illumination system (1-6) for providing a beam of radiation used to illuminate a patterning device (7); a first support (8-9) for supporting the patterning device (7), the patterning device capable of patterning the beam of radiation; a second support (12,15) for supporting a substrate (W); a projection system (PL) for projecting the patterned beam of radiation onto a target portion of the substrate; and sensor/or vibration sensor/geophone (16) for measuring at least one of the velocity and the acceleration of the projection system (see col.20, lines 44-46; and claims 29-30) and outputting sensing signals indicative thereof ; and a controller (17) for receiving the signals from the sensor (16) and interfaces/vibration proof device/ and or supporting device (see col.15, lines 33-41) for supporting and adjusting the at least one of the position and orientation of the projection optical system. Akimoto further teaches the parameters of the vibration proof device supporting the projection optical system (PL) being selected so as to minimize the flexural vibration mode in the projection optics (see col.21, lines 20-25). Akimoto does not expressly disclose controlling

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at least the position and an orientation of the projection system based on at least one of the velocity and an acceleration of the projection system. Takahashi teaches an exposure apparatus where the acceleration detectors are provided to detect the vibration/acceleration/speed of the supporting member of the projection optical system and controlling an output of a drive device provided between the supporting member based upon results of detection of the vibration/acceleration/speed sensor (see claims 1-3 of Takahashi). In view of such teachings, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Akimoto and Takahashi to obtain the invention as specified in the above claims. It would have been obvious to a skilled artisan to control at least the position and an orientation of the projection system as suggested by Takahashi in response to the acceleration/or speed signals of the projection system of Akimoto. The purpose of doing so would have been to compensate the motion of the projection system and thus to improve the quality of the images to be printed.

With respect to claims 14-15, the claimed method is seen to be inherent teachings in existence of the above apparatuses.

3. Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akimoto et al (U.S.Pat. 6,359,688) in view of Takahashi et al (U.S.Pat. 6,522,388) and further in view of Wakui (U.S.Pat. 6,327,026).

As to claims 6-8, Akimoto as modified by Takahashi, lacks to show the projection system mounted in a system with 6 degrees of freedom. Wakui teaches parallel link mechanism used in a lithographic projection device (see figure 1; col.2 lines 18-38) for moving an object in 6 degrees of freedom. It would have been obvious to a skilled artisan to employ the parallel link as

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taught by Wakui into the exposure device of Akimoto as modified by Takahashi for the purpose of moving the projection optical system in all the six degrees of freedom and improving the throughput of the exposure apparatus.

***Prior Art Made of Record***

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

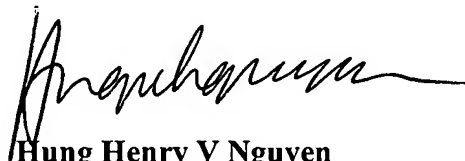
Makinouchi et al (U.S.Pat. 6,490,025) discloses an exposure apparatus where an acceleration sensor is provided on the projection optical system for measuring the acceleration/speed of the projection optical system.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung Henry V Nguyen whose telephone number is 571-272-2124. The examiner can normally be reached on Monday-Friday (First Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Russ Adams can be reached on 571-272-2112. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



**Hung Henry V Nguyen**  
**Primary Examiner**  
**Art Unit 2851**

hvn  
8/3/04